Reg. No. : | | | | | | | | | | | | |

Question Paper Code: R1330

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2025

First Semester

CSE (Cyber Security)

R21UEE130- FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS ENGINEERING

(Regulations R2021)

(Common to CSE (IoT) Engineering Branch)

Duration: Three hours | Maximum: 100 Marks

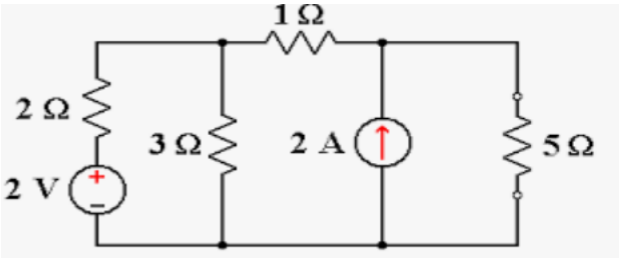
Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	Explain KCL and KVL.	CO1- U
2.	Describe the torque equation of a DC Motor.	CO1-U
3.	Illustrate peak to Peak value.	CO1- U
4.	Explain reactive power.	CO1 -U
5.	Discuss about Avalanche breakdown.	CO1- U
6.	Illustrate the symbol for NPN and PNP transistors.	CO1-U
7.	Describe the principle of operation of a Moving Iron instrument.	CO1- U
8.	Illustrate the difference between deflecting torque and controlling torque in analog instruments.	CO1 -U
9.	Describe the main blocks of a Digital Storage Oscilloscope (DSO).	CO1- U
10.	Compare Lap winding and Wave Winding of a DC machine armature.	CO1 -U

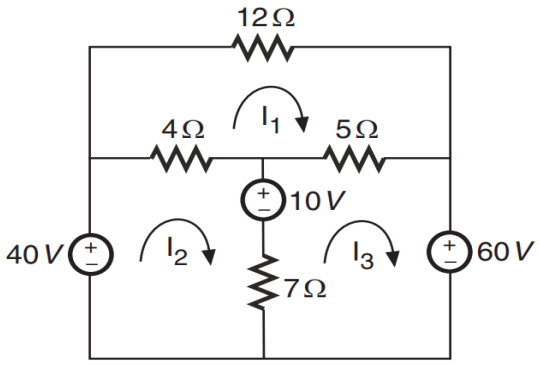
PART – B (5 x 16= 80 Marks)

11.	(a)	Apply KCL and find the nodal voltage and current following through 1Ω in the circuit	CO2- App	(16)



Or

(b) Using mesh analysis, calculate the current flowing through the 12 Ω resistor in the given circuit. CO2- App (16)



12. (a) Explain the constructional details and working of core type and shell type transformers with neat sketches. CO1- U (16)

Or

(b) Discuss about various types of DC motors with neat sketches. CO1- U (16)

13. (a) Analyse the operation of an N-channel JFET used as a voltage-controlled resistor in an automatic street-lighting system. CO4- Ana (16)

Or

(b) With a neat diagram, analyse the operation and performance of a Full-Wave Rectifier used in the DC power stage of a radio receiver. CO4-Ana (16)

14. (a) Explain the role of calibration in maintaining the accuracy and traceability of electrical instruments. CO1- U (16)

Or

(b) Illustrate the data acquisition process used in modern measurement systems. CO1- U (16)

15. (a) Derive an expression for the EMF Equation of DC Generator and explain its types CO1- U (16)

Or

(b) Derive the torque equation for DC motors. Discuss the factors influencing torque production and how it relates to motor performance. CO1- U (16)